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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,889	11/17/2003	Gerald L. Timm	1349	5292

7590  
DAVID J. ARCHER  
7037 POMEROY RD.  
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04/17/2007

EXAMINER
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RINEHART, KENNETH

ART UNIT	PAPER NUMBER
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3749

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/17/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/715,889

Applicant(s)

TIMM ET AL.

Examiner

Kenneth B. Rinehart

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15 and 16 is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION*****Response to Arguments***

Applicant's arguments filed 2/26/07 have been fully considered but they are not persuasive. In general the applicant argues that the primary references do not show the the transfer of thermal energy in said cross machine direction or through said dryer shell being maximized or minimized, etc.. Such arguments are not persuasive as heat transfer is occurring in the primary references and the minimization nor maximization, etc. the applicant is performing is merely the optimization of the transfer of energy which is well within the ability of an individual of ordinary skill. The applicant is merely providing a certain number or spacing of bars to provide for an optimized result. The surfaces of items 12 and 8 of the primary references influence heat transfer as it is well known in the art to rib surfaces to influence heat transfer and the rotation of the shell would inherently cause turbulence. Regarding applicant's arguments against Wimmer and Ives, the references were used to teach hollow tubes and not unique use of quarter-resonance to achieve previously unexpected results including uniform heat transfer together with low heat transfer rates.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 5-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salminen (5,564,494). Salminen discloses a rotatable dryer shell of cylindrical configuration,

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said dryer shell having an outer surface for drying the web; said dryer shell having an inner surface which defines an enclosure, said inner surface having a radius  $R_i$  (col. 1, line 19, fig. 18); said enclosure being connected to a source of pressurized steam such that in operation of the dryer, a transfer of thermal energy from the steam within said enclosure through said inner surface of said dryer shell to said outer surface of said dryer shell is achieved so that the web is dried (col. 1, lines 17-20, 24-27); a syphon disposed within said enclosure for controlling a layer of condensed steam accumulating adjacent to said inner surface of said dryer shell during operation of said apparatus (col. 1, line 37); a number of turbulence bars disposed within said enclosure, each of said turbulence bars extending in a cross machine direction in contact with said inner surface, said bars being circumferentially spaced equidistantly around said inner surface of said dryer shell for generating turbulence within said layer so that uniformity of said transfer of thermal energy in said cross machine direction ... while said transfer of thermal energy through said dryer shell from said inner to said outer surface ... (112, 108, 110, fig. 12a, abstract), a rotatable dryer shell of cylindrical configuration, said shell defining an outer and an inner surface (fig. 18); a number of dryer bars pressed outwardly against said inner surface, each of said bars extending in a cross machine direction along said inner surface; and each bar being spaced from an adjacent bar by a ... such that a rate of heat transfer through said dryer shell from said inner to said outer surface is... a temperature uniformity in said cross machine direction (112, 108, 110, fig. 12a, abstract). Salminen discloses applicant's invention substantially as claimed with the exception of is maximized, is minimized, and said number of turbulence bars being determined by the equation:  $N = \text{int} \{ 2\pi R_o / [4\pi (R_i^2 - R_o^2) / 2 + W] \}$  in which:  $N$  = said number of turbulence bars in said dryer shell;  $\text{int}$  = an

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integer number of a value in { } brackets;  $n=3.1415$ ;  $R_i$  = said inside radius of said inner surface of said dryer shell in inches;  $\delta$  = an average depth of said layer in inches;  $W$  = a width of each of said turbulence bars in inches, said number of turbulence bars is equal to  $N + 1$ , said number of turbulence bars is equal to  $N + 2$ ,  $N=3$ ,  $N=4$ ,  $N=5$ ,  $N=6$ ,  $N=7$ ,  $N=8$ ,  $N=9$ , quarter-resonant spacing, minimized while optimizing, said quarter-resonant spacing is determined by an equation:  $S=4x(R_i \delta)^{1/2}$  in which;  $S$  = said quarter-resonant spacing;  $\delta=3.1415$ ;  $R_i$  = said inside radius of said inner surface of said dryer shell in inches;  $\delta$  = an average depth of a layer of condensed steam disposed adjacent to said inner surface in inches.. It would have been obvious to one of ordinary skill in the art at the time the invention was made to is maximized, is minimized, and said number of turbulence bars being determined by the equation:  $N = \text{int} \{ 2n R_i / [4x(R_i \delta)^{1/2} + W] \}$  in which:  $N$  = said number of turbulence bars in said dryer shell;  $\text{int}$  = an integer number of a value in { } brackets;  $n=3.1415$ ;  $R_i$  = said inside radius of said inner surface of said dryer shell in inches;  $\delta$  = an average depth of said layer in inches;  $W$  = a width of each of said turbulence bars in inches,  $N=3$ ,  $N=4$ ,  $N=5$ ,  $N=6$ ,  $N=7$ ,  $N=8$ ,  $N=9$ , quarter-resonant spacing, minimized while optimizing, said quarter-resonant spacing is determined by an equation:  $S=4x(R_i \delta)^{1/2}$  in which;  $S$  = said quarter-resonant spacing;  $\delta=3.1415$ ;  $R_i$  = said inside radius of said inner surface of said dryer shell in inches;  $\delta$  = an average depth of a layer of condensed steam disposed adjacent to said inner surface in inches. since it has been held that discovering an optimum value of a results effective variable involves only routine skill in the art.

Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barnscheidt (3217426). Barnscheidt discloses a rotatable dryer shell of cylindrical configuration, said dryer shell having an outer surface for drying the web; said dryer shell having an inner surface which

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defines an enclosure, said inner surface having a radius  $R_i$  (fig. 1, col. 3, lines 5-10); said enclosure being connected to a source of pressurized steam such that in operation of the dryer, a transfer of thermal energy from the steam within said enclosure through said inner surface of said dryer shell to said outer surface of said dryer shell is achieved so that the web is dried (col. 1, lines 12-20, lines 30-33, ); a syphon disposed within said enclosure for controlling a layer of condensed steam accumulating adjacent to said inner surface of said dryer shell during operation of said apparatus (fig. 1); a number of turbulence bars disposed within said enclosure, each of said turbulence bars extending in a cross machine direction in contact with said inner surface, said bars being circumferentially spaced equidistantly around said inner surface of said dryer shell for generating turbulence within said layer so that uniformity of said transfer of thermal energy in said cross machine direction ... while said transfer of thermal energy through said dryer shell from said inner to said outer surface ... (col. 3, lines 72-75, col. 4, lines 1-5), a rotatable dryer shell of cylindrical configuration, said shell defining an outer and an inner surface (fig. 1); a number of dryer bars pressed outwardly against said inner surface, each of said bars extending in a cross machine direction along said inner surface; and each bar being spaced from an adjacent bar by a ... such that a rate of heat transfer through said dryer shell from said inner to said outer surface is... a temperature uniformity in said cross machine direction (fig. 1, col. 3, lines 72-75, col. 4, lines 1-5), a further number of hoop segments spaced circumferentially along said inner surface of said dryer shell for holding said turbulence bars in contact with said inner surface; said number of turbulence bars being a multiple of said further number of hoop segments (6, fig. 1), holding a number of bars axially against an inside surface of the dryer cylinder (8,9, fig. 3), said number being within a range 3 to 9; and locating hoop

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segments within the dryer cylinder such that each segment is disposed in a generally circumferential position (fig. 3, fig. 1). Barnscheidt discloses applicant's invention substantially as claimed with the exception of is maximized, is minimized, and said number of turbulence bars being determined by the equation:  $N = \text{int} \{ 2\pi R_i / [4\pi (R_i f_i) l/2 + W] \}$  in which: N= said number of turbulence bars in said dryer shell; int= an integer number of a value in { } brackets;  $n=3.1415$ ;  $R_i$  = said inside radius of said inner surface of said dryer shell in inches;  $l$  = an average depth of said layer in inches;  $W$  = a width of each of said turbulence bars in inches, said number of turbulence bars is equal to  $N + 1$ , said number of turbulence bars is equal to  $N + 2$ ,  $N=3$ ,  $N=4$ ,  $N=5$ ,  $N=6$ ,  $N=7$ ,  $N=8$ ,  $N=9$ , quarter-resonant spacing, minimized while optimizing, said quarter-resonant spacing is determined by an equation:  $S = 4\pi (R_i f_i) l/2$  in which;  $S$  = said quarter-resonant spacing;  $n=3.1415$ ;  $R_i$  = said inside radius of said inner surface of said dryer shell in inches;  $l$  = an average depth of a layer of condensed steam disposed adjacent to said inner surface in inches, the number of bars is 3, 4, 5, 7, 8, 9. It would have been obvious to one of ordinary skill in the art at the time the invention was made to is maximized, is minimized, and said number of turbulence bars being determined by the equation:  $N = \text{int} \{ 2\pi R_i / [4\pi (R_i f_i) l/2 + W] \}$  in which: N= said number of turbulence bars in said dryer shell; int= an integer number of a value in { } brackets;  $n=3.1415$ ;  $R_i$  = said inside radius of said inner surface of said dryer shell in inches;  $l$  = an average depth of said layer in inches;  $W$  = a width of each of said turbulence bars in inches,  $N=3$ ,  $N=4$ ,  $N=5$ ,  $N=6$ ,  $N=7$ ,  $N=8$ ,  $N=9$ , quarter-resonant spacing, minimized while optimizing, said quarter-resonant spacing is determined by an equation:  $S = 4\pi (R_i f_i) l/2$  in which;  $S$  = said quarter-resonant spacing;  $n=3.1415$ ;  $R_i$  = said inside radius of said inner surface of said dryer shell in inches;  $l$  = an average depth of a layer of condensed

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steam disposed adjacent to said inner surface in inches. since it has been held that discovering an optimum value of a results effective variable involves only routine skill in the art.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barnscheidt et al (3217426) as applied to claim 12 above, and further in view of Wimmer (4,478,168).

Barnscheidt et al discloses a cross-section of each of said bars is within a range from 0.25 inches x 0.25 inches to 1.0 inches x 1.50 inches (col. 4, lines 29); each of said bars is metallic and of ... configuration (fig. 1); said apparatus including: at least one hoop for pressing each of said bars against said inner surface of said dryer shell (fig. 2); said at least one hoop including: at least one segment (fig. 2). Barnscheidt discloses applicant's invention substantially as claimed with the exception of hollow tubular. Wimmer teaches hollow tubular to reduce weight. It would have been obvious to one of ordinary skill in the art to modify Barnscheidt by including hollow tubular as taught by Wimmer for the purpose of reducing weight for ease of transportation.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barnscheidt et al (3217426) as applied to claim 12 above, and further in view of Ives (7028756). Barnscheidt et al discloses a cross-section of each of said bars is within a range from 0.25 inches x 0.25 inches to 1.0 inches x 1.50 inches (col. 4, lines 29); each of said bars is metallic and of ... configuration (fig. 1); said apparatus including: at least one hoop for pressing each of said bars against said inner surface of said dryer shell (fig. 2); said at least one hoop including: at least one segment (fig. 2). Barnscheidt discloses applicant's invention substantially as claimed with the exception of hollow tubular. Ives teaches hollow tubular to reduce weight. It would have been obvious to one of ordinary skill in the art to modify Barnscheidt by including hollow tubular as taught by Wimmer for the purpose of reducing weight for ease of transportation.



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***Allowable Subject Matter***

Claims 15 and 16 are allowed.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth B. Rinehart whose telephone number is 571-272-4881. The examiner can normally be reached on 7:20 -4:20.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

kbr

  
KENNETH RINEHART  
PRIMARY EXAMINER